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## Are our Actions Aligned with our Evidence? The Skinny on Changing the Landscape of Obesity

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### Abstract

Recent debate about the role of food deserts in the United States (i.e., places that lack access to healthy foods) has prompted discussion on policies being enacted, including efforts that encourage the placement of full-service supermarkets into food deserts. Other initiatives to address obesogenic neighborhood features include land use zoning and parks renovations. Yet, there is little evidence to demonstrate that such policies effect change. While we suspect most researchers and policymakers would agree that effective neighborhood change could be a powerful tool in combating obesity, we desperately need strong and sound evidence to guide decisions about where and how to invest.

### Keywords

Food Desert; Food Access; Food Policy; Natural Experiment; Supermarket; Obesity

America's obesity crisis spans the demographic spectrum, but one of the hardest hit groups is residents of low income urban neighborhoods.<sup>1</sup> Many of these neighborhoods have been alternatively described as “food deserts” because of the lack of readily available produce, or as “food swamps” due to concentration of unhealthy fast, processed and packaged foods. And many of these neighborhoods lack safe parks and well-maintained sidewalks that could encourage physical activity and active transport.

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In response, policymakers are implementing strategies to change the “choice environment” in these neighborhoods, to promote healthier eating and exercise habits by making these options more accessible. Programs such as Pennsylvania’s Fresh Food Financing Initiative and California’s Freshworks Fund have harnessed hundreds of millions of dollars in public and private funding to encourage placement of supermarkets in low-income communities. Legislation related to the development of parks, walking, biking, and running trails has been enacted across the nation. Land zoning code reforms have emerged to reduce reliance on cars and increase physical activity opportunities. Such policies are in line with widely accepted obesity prevention recommendations from researchers, public health practitioners and policy guiding organizations including the Institute of Medicine.<sup>2</sup>

Policies to address obesogenic features of the neighborhood environment make intuitive sense: people make choices to eat foods and engage in physical activity to the extent that their circumstances allow them to do so. And even when people *can* make healthy choices and intend to do so, research suggests that environmental cues such as the presence of fast food outlets, the display of snack foods at check-out, or the presence of fitness facilities at a local park, subconsciously influence their behavior.<sup>3</sup>

Yet the evidence is not as clear as the intuition. There is agreement that residents of economically disadvantaged neighborhoods have increased odds of obesity. But some research has shown that this is a function of poor access to healthy food options<sup>6</sup> while other findings suggest that healthy food options in grocery stores have little to do with dietary intake or obesity<sup>5</sup> and overweight status has more to do with density of fast food outlets and convenience stores.

Research exploring the relationship between greenspace and physical activity is similarly inconclusive. Some studies have shown that living closer to a park is associated with increased physical activity, while others indicate that park programming and facilities play a larger role in individuals’ exercise over geographic proximity.<sup>10</sup>

Why the contradictions? To date, most of the research has heavily relied on secondary data developed for other purposes; typically, these are commercial databases of business names, types, and locations, or databases of park and greenspace locations. For example, many studies assume all grocery stores under the same chain name, or with similar square footage, are equivalent. Others have not been able to collect detailed information about the quality, price or display of foods available for purchase, or the condition of physical fitness facilities. Further, some researchers have made assumptions about individual respondent accessibility to a business or physical activity venue, without knowing how respondents travel or how difficult it might be to get to that location. A grocery store or park that is within a mile may be subjectively close or far, depending on such factors.

Few studies have had access to detailed data about food purchasing, dietary and exercise behaviors among residents of low-income neighborhoods, much less detailed information about food establishments and exercise facilities inside and outside the neighborhood. Without these details, the validity of measures is questionable and estimates of associations can be widely variable and fraught with error.

Moreover, almost all studies to date have been based on cross-sectional designs, and it is unclear whether selection bias is responsible for findings. Do people who are already dedicated to exercise choose to live close to greenspaces? Or, does access to greenspace encourage people to be more interested in exercise? Do convenience stores proliferate because demand for fresh food is low, or do they encourage dietary habits that focus on packaged goods? Environments may not cause weight gain, they may instead have evolved to accommodate the eating and exercise habits of their inhabitants.

Most pressing is the lack of hard evidence that demonstrates the impact of neighborhood *changes*. Even if food deserts contribute to poor diet and lack of greenspace leads to lack of exercise, can we be sure that making healthy food and parks available will alter those behaviors? What people eat is determined by culture, cost, and habit, as well as availability. People may go to parks without exercising or shop at grocery stores without buying vegetables. To date, there has been no published research in the United States documenting the effect of environmental changes on changes in diet, physical activity, and weight.

The good news is that the policies themselves create a perfect opportunity to test the assumptions that underlie them. Each new supermarket or renovated greenspace in a low income urban neighborhood is a natural experiment, or opportunity to observe the effects of naturally occurring changes in the environment, policy or practice, that can be studied in a rigorous, scientific manner by comparing different levels of the “treatment” exposure while controlling for selectivity in such exposure.

Such studies are underway across the nation. Here, we highlight just a few projects of which we are aware. At the University of Utah, Barbara Brown is taking advantage of a rare opportunity to study a neighborhood and its residents before and after a “Complete Street” intervention with a new rail line, a bike path, and a multi-use trail. Natalie Colabianchi, at the University of Michigan, is examining how participants who moved to “better” neighborhoods through The Moving to Opportunity for Fair Housing Demonstration fared in terms of obesity, physical activity and diet. And at the University of Illinois, Chicago, Jamie Chiqui is examining whether zoning code reforms help cities achieve more active living-oriented physical environments and higher levels of physical activity.

And our own team is leading a study set in two communities in an urban metropolitan area. The study will be the largest in the United States to-date examining the impact of changes in the food and physical activity landscape of a low-income, predominantly African American urban neighborhood on food purchasing, diet, and physical activity. Currently, prevalence of overweight or obesity is 78 percent across the two neighborhoods. The intervention neighborhood has not had a full-service grocery store for more than three decades and its surrounds are met with vacant lots and deteriorated playgrounds. But, by the end of this year, an 8.5 million dollar full-service grocery store will be in place. Next year, millions of dollars will go towards the renovation and expansion of usable greenspace, changing the physical activity options as well and the aesthetic environment of the neighborhood. In the sociodemographically similar comparison neighborhood, no such changes are anticipated.

In both neighborhoods, we are measuring where people shop, how much they spend, and how they travel. We are documenting what foods are sold where, how much they cost, and their quality. We are capturing neighborhood topography, sidewalk quality, and crime; along with measures of diet and physical activity. After we collect follow-up data, we will have important information suggesting whether, how, and to what extent changes in the environment shape changes in behavior.

For some, it may be a matter of social justice that fresh produce and green walkways are available to residents of low income urban neighborhoods. And we suspect most researchers and policymakers would agree that changes in neighborhoods, if effective, could be powerful tools in combating obesity. Moving forward, it is critical that we apply the strongest methodological approaches in examining the impact of these changes, so that future policymaking is better informed. Methods that could greatly contribute to difficult decisions about regulation and resource allocation include longitudinal examinations of diet, obesity, and physical activity 1) before and after policy implementation that correct for endogeneity of policy shifts with matched control communities (as in our study), 2) in populations that are haphazardly or randomly assigned to varying policy environments like communities and schools (e.g. military families, children in some school districts), statistical approaches like propensity weighting to correct for selective exposure to policy shifts, qualitative methods to help identify and extract the multifaceted influences embedded in change, and cost-benefit approaches used in program evaluation. After all, policymakers, especially in times of fiscal belt tightening, need strong and sound evidence to guide them in making difficult decisions about where to invest as they attempt to stem the national obesity tide.

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